REMARKS

Reconsideration and further examination is respectfully requested.

Rejections under 35 U.S.C. §112, second paragraph

Claims 1, 4 and 6 were rejected under 35 U.S.C. §112,second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended the claim to overcome this ground of rejection by replacing the term 'connection' with 'network.' It is therefore requested that the rejection be withdrawn.

Rejections under 35 U.S.C. §102

Claims 1, 4 and 6 were rejected under 35 U.S.C. §102(e) as being anticipated by Ludwig, U.S. 6,754,228.

Ludwig:

Ludwig describes a method and device for controlling the flow of a data amount from a sender to a receiver in a packet exchange connection. In the Background, Ludwig describes several congestion control mechanisms of TCP/IP, in particular Ludwig describes at column 1 lines 54-57 that, in a connection between a sender and a receiver, 'A TCP sender is not allowed to have more unacknowledged packets outstanding than the amount defined by the advertised window...' where the window 'usually corresponds to the input buffer capacity on the receiver side....' In this passage, Ludwig is describing how TCP controls traffic flow on an individual connection.

Ludwig describes the TCP congestion control mechanism, at column 4 line 40 '... the control of data flow in TCP is not only performed in accordance with the above advertised window, but also in accordance with the congestion window. The congestion window is used by a routine called slow start.... When a new connection is established, the congestion window is initialized to one segment of data. Each time that an acknowledgement is received by the sender, the congestion is increased by one segment. The sliding window control explained above ... is performed with either the advertised window or the congestion window, whichever is smaller...The advertised window is determined by the receiver, whereas the congestion window is determined by the sender. Therefore the congestion window is flow control imposed by the sender, while the advertised window is flow control imposed by the receiver..."

Ludwig's flow control mechanism is described at column 6 as 'Flow control in a connection over which an amount of data is to be send directly employs information on the connection, namely one or more bandwidth values associated with the links forming the connection. In this way, flow control can be directly adapted to the situation on the network..."

Accordingly, Ludwig describes and suggests only how flow control is performed for individual connections.

As described in Applicant's specification, the slow start mechanism of TCP/IP is not effective for systems that use the Stream Transmission Control Protocol (SCTP), for at least the reason that it slows forwarding of traffic streams over operable alternate paths.

For example, Applicant's specification describes, at page 6, line 23- page 7 line -9, Applicants specification describes:

"… Like TCP, SCTP is a connection-oriented mechanism, meaning that a relationship is created between endpoints of an SCTP session prior to data being transmitted, and this relationship is maintained until all data transmission has been successfully completed …. For example, *SCTP supports multiple paths for transmission, so that traffic can be switched to an alternate path if the primary path is blocked or congested…*" (Emphasis added by Applicant) As mentioned at page 5, lines 1-10 of Applicant's specification, the problems with the slow start mechanism of TCP/IP are as follows:

"… when using it to control the flow of data into a newly-opened connection, traffic cannot ramp up to the desired rate as quickly as possible. Further, if, for example, two connections are used for redundancy, when one path fails it is not possible to immediately transfer the full load to the other path --- it is necessary to go through the slow start process. This is particularly evident in a redundant network having a primary and a backup link. If the primary fails, because of the slow start all of the traffic cannot immediately be transferred to the backup. Instead, traffic can be increased on the backup only at the rate allowed by slow start, even if the network is pre-configured to allow some reserve bandwidth for the backup link…"

The present invention, as described on page 12, lines 3-5 of Applicant's specification, '*controls the bandwidth of the association…*' between end-points in a SCTP network 'to be no more than the lesser of the unacknowledged traffic at the time of potential congestion detection and the receiver buffer size…' One advantage of this invention is described at page 12 lines 14 – 17 "… The sender continues to send retransmissions as needed; however, these will only take away from the estimated bandwidth allotted for the connection, and the association can maintain its usual rate of traffic generation into the network…Thus, with the above described embodiment the TCP slow start ramp up of traffic is avoided and traffic may be sent immediately at the

assigned rate as long as the send buffer occupancy does not increase above the onset threshold, which would indicate congestion on the alternate path…"

The independent claims have been amended to more clearly recite the subject matter of Applicants' invention. For example, claim 1, as amended, now recites the step of "…detecting a network congestion condition on one of a plurality of connections between a sender and a receiver in the communications network, the plurality of connections providing an association between the sender and receiver and-having a desired fixed bandwidth, the network congestion condition detected in response to an occupancy threshold of a transmit buffer of the sender…" Applicants submit that support for the amendments can be found in the above cited paragraphs of Applicant's specification. Independent claims 4 and 6 have been amended to also more particularly recite that the 'fixed bandwidth' is associated with the 'association' between the sending and receiving node. No such structure is shown or suggested in Ludwig, and it is therefore respectfully requested that the rejection be withdrawn.

Rejections under 35 U.S.C. §103

Dependent claims 3 and 5 were rejected under 35 U.S.C. §103 as obvious in view of Ludwig. The Examiner states that 'Ludwig discloses substantially all the limitations of claims 3 and 5, except it doesn't disclose the network been a private network … However, it would be obvious to a person of ordinary skill in the art … to implement the congestion control mechanism of Ludwig to a private network such as an Intranet so that bandwidth optimization can be provided in a similar manner as in the communication network of Ludwig, for example taking advantage of minimizing congestion applied to a private network (Ludwig column 9, lines 44-53).

Applicants disagree that one would be motivated to modify Ludwig for use in private networks, as it appears that the goal of Ludwig is to provide a method for identifying bottlenecks in public networks. However, even assuming that such a modification can be made, Applicants submit that the dependent claims are patentable over Ludwig for at least the reason that they depend from a claim that is patentable for the reasons outlined above.

New Claim 14

Applicant has added new claim 14, which recites:

"... A method of controlling congestion in a communications network, the method comprising ... establishing an association between a sender and a receiver including the step of identifying a plurality of connections for providing communication between the association ... allocating a fixed bandwidth to the association, the fixed bandwidth being shared by the plurality of connections ...forwarding communications from the sender to the receiver on one of the plurality of connections ... detecting a network congestion condition on the one of a plurality of connections; and upon detection of the network congestion condition, controlling new traffic emitted onto another one of the plurality of connections such that the sum of traffic on the plurality of connections does not exceed the fixed bandwidth allocated to the association..." As described above, no mention or suggestion is found in Ludwig for several of the limitations of claim 14. In particular, Ludwig neither describes nor suggests "... establishing an association between a sender and a receiver...including ... identifying a plurality of connections .... and 'controlling new traffic ... such that the sum of traffic on the plurality of connections does not exceed the fixed bandwidth allocated to the association..."

As described above, such features of the present invention allow traffic to be forwarded over an alternate path upon detection of congestion, without incurring delays associated with slow start ramp up. Applicants submit that support for the newly added claim can be found in the portions of Applicants' specification previously identified in this response.

Conclusion:

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone the undersigned, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date

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